

RESTRICTED CIRCULATION

THIS PAPER IS NOT AN OFFICIAL DOCUMENT; IT IS FOR INFORMATION ONLY AND MUST NOT BE QUOTED IN ANY PRINTED PUBLICATION

Agricultural Memorandum No. 707

Estimated Actual Soil Moisture Deficits, 1941-1970 - NORTHEAST

L P Smith

Data for the stations listed in MAFF Tech.Bull.No.24, for the estimated SMDs at the end of June, July, August and September were examined to find:-

Lower Quartile - seventh in ascending numerical order

Median - fifteenth in ascending numerical order

Higher Quartile - seventh in descending numerical order

and then analysed with respect to the 1941-1970 average rainfall April-June (R_3), April-July (R_4), April-August (R_5), April to September (R_6) (in millimetres) and the mean of the estimated P.T.s used in the original calculations over the same sets of months, (P_3 , P_4 , P_5 , P_6).

The multiple correlations for 12 stations in the NORTHEAST were:-

	L.Q.	Median	H.Q.
End of June	0.97	0.90	0.92
" " July	0.92	0.96	0.93
" " August	0.89*	0.96	0.92
" " September	0.90**	0.89	0.97

* For annual average rainfalls under 750 mm.

** For annual average rainfalls under 675 mm.

Above these values the LQ was zero, i.e. soil at capacity.

The formulae were as follows:-

	L.Q.	M	H.Q.
End of June	$0.88P_3 - 0.022R_3 - 2.38$	$0.45P_3 - 0.011R_3 + 0.37$	$0.36P_3 - 0.011P_3 + 1.82$
End of July	$0.48P_4 - 0.02R_4 + 0.67$	$0.43P_4 - 0.015R_4 + 1.15$	$0.34P_4 - 0.0125R_4 + 2.46$
End of August	$0.93P_5 - 0.028R_5 - 4.45$ (Annual average below 750 mm)	$0.78P_5 - 0.015R_5 - 4.4$	$0.79P_5 - 0.0115R_5 - 4.3$
End of September	$0.54P_6 - 0.04R_6 + 4.7$ (Annual average below 675 mm)	$0.85P_6 - 0.012R_6 - 7.6$	$0.56P_6 - 0.016R_6 + 0.24$

Details are given below of the original data

NORTHEAST

Ilkley	0.6	2.0	2.8	1.2	2.4	3.2	0.0	1.3	3.2	0.0	0.0	1.6
Bellingham	0.4	1.9	2.6	0.5	1.7	2.7	0.0	0.6	1.8	0.0	0.0	1.0
Ampleforth	1.5	2.2	2.8	1.1	2.5	3.4	0.0	2.2	3.2	0.0	1.0	3.1
Cockle Park	1.5	2.4	3.1	1.3	2.6	3.3	0.2	1.7	2.4	0.0	0.2	2.4
Houghall	1.7	2.2	3.2	1.7	3.0	4.0	0.7	2.2	4.0	0.0	1.5	3.7
Wakefield	2.3	2.7	3.4	2.4	3.4	4.1	1.0	3.0	4.1	0.0	2.5	4.2
Driffield	1.8	2.7	3.2	2.8	3.1	3.7	1.9	2.9	3.9	0.0	2.4	4.0
Askham Bryan	2.1	2.8	3.5	2.5	3.6	4.1	2.3	2.8	4.2	0.1	2.3	4.4
Tynemouth	1.7	2.7	3.3	2.2	3.0	4.0	0.9	2.2	3.3	0.3	1.0	3.3
Hull	1.8	2.8	3.4	2.4	3.3	4.1	1.3	2.7	4.3	0.4	2.0	4.3
Berwick	1.8	2.5	3.3	2.5	3.2	3.8	0.5	2.6	3.5	0.0	1.5	3.4
Finningley	2.3	2.7	3.5	2.7	3.5	4.2	2.4	4.1	4.5	1.7	3.6	4.5

Any comments or suggestions on this paper should be referred to the author.

Meteorological Office
Bracknell

February 1975